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Basin Outlook Reports

and Federal - State - Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

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How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

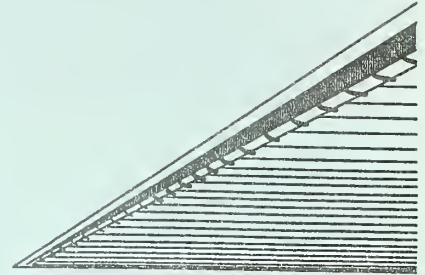
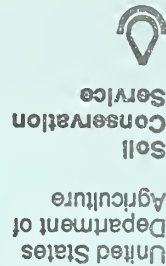
Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

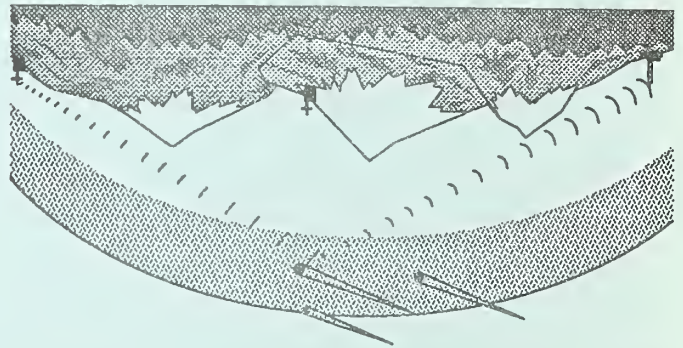
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In addition to basin outlook reports, a Water Supply Forecast for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209-3489.

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JUNE 1990

GENERAL OUTLOOK

SUMMARY:

MAY TEMPERATURES WERE NEAR NORMAL AND VARIED FROM 2 DEGREES BELOW IN THE YAKIMA BASIN TO 1 DEGREE ABOVE AVERAGE IN THE OKANOGAN BASIN. THE SNOWPACK IS GONE FROM THE LOW ELEVATIONS, BUT THE HIGH ELEVATION SNOTEL SITES ARE ABOVE AVERAGE. MAY PRECIPITATION WAS 180% OF NORMAL STATE WIDE, AND VARIED FROM 361% OF AVERAGE IN THE OKANOGAN BASIN TO 72% IN THE NORTH PUGET BASIN. WASHINGTON'S SNOTEL SITES ARE AVERAGING 84% OF NORMAL SNOWPACK ON JUNE 1 (BY JUNE 8, THE STATEWIDE AVERAGE WAS 113%). JUNE 1 RESERVOIR STORAGE IS GOOD THROUGHOUT THE STATE, WITH RESERVOIRS IN THE YAKIMA BASIN AT 112% OF AVERAGE AND 99% OF CAPACITY, AND MOST OF THE REST SHOWING OVER 100% OF AVERAGE. MAY STREAMFLOWS VARIED FROM 89% OF NORMAL ON THE OKANOGAN RIVER TO 60% ON THE YAKIMA RIVER AT KIONA. FORECASTS FOR 1990 RUNOFF VARY FROM 99% OF AVERAGE FOR ICICLE CREEK TO 56% ON MILL CREEK IN THE WALLA WALLA BASIN.

SNOWPACK:

SNOTEL sites in Washington are showing snowpack that is 84% of average for June 1, state wide, up from 82% on May 1. Fifteen of the 37 SNOTEL sites are bare of snow, eighteen were bare on June 1 last year. Snowpack varies over the state from 181% of normal in the Green Basin to 64% in the Pend Oreille River Basin. The Yakima Basin is now at 99%, up from 76% last month. Snowpack in other basins along the west slopes of the Cascade Mountains are the Skagit with 106%, up from 81%, and the Cowlitz Basin with 83%. The eastern slopes of the Cascade Mountains show the Wenatchee Basin at 93%, up from 80% of normal, and the Chelan at 100%, up from 92%. Maximum snow cover is at the Paradise Park SNOTEL, on Mt. Rainier, with 71.4 inches of water content. This site would normally have 70.7 inches of water content on June 1.

PRECIPITATION:

State wide, May precipitation from National Weather Service stations was 180% of average. May precipitation varied from 361% of average in the Okanogan Basin, to 72% in the North Puget basin. The year-to-date precipitation varied from 115% of normal in the Colville-Pend Orielle Basin to 100% in the Olympic Peninsula Basin. SNOTEL sites in Washington showed the high elevation year-to-date precipitation values to be 100% of average, up from 99% of normal on May 1. Maximum year-to-date precipitation was at the June Lake SNOTEL site on Mt. St. Helens with 155.9 inches since October 1.

RESERVOIRS:








Reservoir storage remained good with most reservoirs at or near average for June 1. Reservoir storage in the Yakima Basin was 1,049,600 acre feet, 112% of normal. Storage at other reservoirs include Roosevelt at 101% of average and the Okanogan reservoirs contain 116% of June 1 normal. The power reservoirs contain the following: Coeur d'Alene Lake, 321,200 acre feet, or 91 % of normal; Chelan Lake, 455,500 acre feet at 101% of average and 67% of capacity, and Ross Lake at 96% of average.

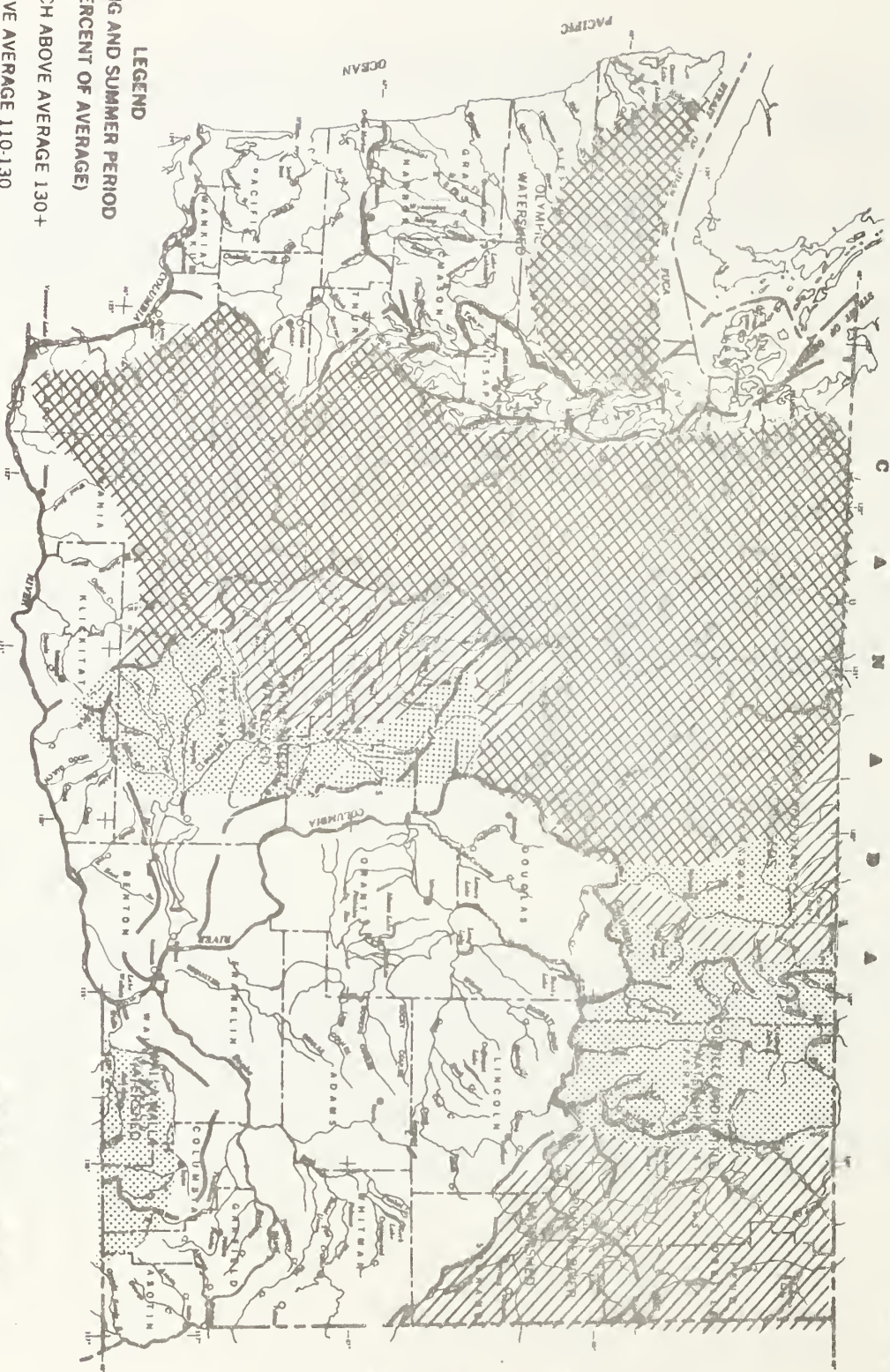
STREAMFLOW:

May streamflows were below average in Washington. Normal temperatures and above normal precipitation caused all low elevation snow to melt. May streamflows were the following, the Lewis River, 75%, the Walla Walla River, 77%; the Spokane River, 75%; the Columbia at the Canadian border, 88%; and at The Dalles, 77 %. June forecasts for some west side streams include: Cedar River, 97%; Skagit River, 92%; and the Dungeness River, 90%. Some east side streams include the Yakima River, 77%; and the Okanogan River, 88%.

JUNE 1990

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85	SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
PENNO OREILLE RIVER							YAKIMA RIVER						
BUNCHGRASS MEADOWS	5000	6/01/90	---	3.2E	--	--	BLENNETT PASS#2PILLON	4270	6/01/90	---	.05	.0	.0
BUNCHGRASS NOWPILLON	5000	6/01/90	---	9.0	7.5	17.2	BUNPING RIDGE PILLON	4600	6/01/90	---	8.1S	10.3	.0
LOOKOUT	5140	5/31/90	20	9.8	3.6	12.1	CORRAL PASS PILLON	6000	6/01/90	---	31.4S	24.9	24.9
NETTLE RIVER							FISH LAKE PILLON	3370	6/01/90	---	10.0S	3.9	.0
BIG WHITE MTN CAN.	5510	5/29/90	8	3.7	5.3	8.9	GREEN LAKE PILLON	6000	6/01/90	---	.0S	5.7	.0
FARROW CAN.	4000	5/28/90	0	.0	.0	.3	GROUSE CAMP PILLON	5380	6/01/90	---	.0S	.0	.0
GRAYSTOKE LAKE CAN.	5940	5/30/90	27	13.0	7.7	12.0	MORSE LAKE PILLON	5400	6/01/90	---	25.4S	29.4	31.2
COLVILLE RIVER							OLALLIE E.S. PILLON	3960	6/01/90	---	36.2S	37.5	40.3
ONAK LAKE, TWIN LAKES							SASSE RIDGE PILLON	4200	6/01/90	---	4.2S	.0	23.0
NISSON (ONAK)	1150	5/25/90	0	.0	--	--	STANPEDE PASS PILLON	3860	6/01/90	---	25.1S	20.1	13.9
MOUNT TOLMAN	2000	5/25/90	0	.0	--	--	WHITE PASS ES PILLON	4500	6/01/90	---	6.1S	.0	15.2
TWIN LAKES	2700	5/25/90	0	.0	--	--	ANTANUM CREEK:						
SPOKANE RIVER							GREEN LAKE PILLON	6000	6/01/90	---	.0S	5.7	.0
LOOKOUT	5140	5/31/90	20	9.8	3.6	12.1	HILL CREEK:						
LOST LAKE	6110	6/02/90	85	39.8	37.5	44.7	HIGH RIDGE PILLON	4980	6/01/90	---	.3S	.0	.0
MOSQUITO RIDGE	5200	6/01/90	---	16.2E	11.5	1.3	LEWIS - CONLITZ RIVERS						
MOSQUITO PILLON	5200	6/01/90	---	15.7	11.0	16.2	JUNE LAKE PILLON	3200	6/01/90	---	.0S	.0	.0
SUNSET	5540	6/01/90	---	17.4E	18.3	18.1	LONG PINE PILLON	3800	6/01/90	---	10.8S	10.0	18.2
SUNSET PILLON	5540	6/01/90	---	19.8	20.3	19.7	PICTAIL PEAK PILLON	5900	6/01/90	---	47.0S	53.2	34.1
NEWMAN LAKE							POTATO HILL PILLON	4500	6/01/90	---	.0S	.0	.0
QUARTZ PEAK PILLON	4700	6/01/90	---	.0	.0	--	SHEEP CANYON PILLON	4050	6/01/90	---	17.9S	29.0	20.0
OKANOGAN RIVER							SPENCER MOUNT PILLON	3400	6/01/90	---	.0S	.0	.0
ENDERBY CAN.	6200	5/29/90	77	44.3	38.2	39.0	SPIRIT LAKE PILLON	3100	6/01/90	---	.0S	.0	.0
GREYBACK RES CAN.	5120	5/29/90	0	.0	.6	.6	SURPRISE LKS PILLON	4250	6/01/90	---	14.2S	29.0	27.8
MARTS PASS PILLON	6500	6/01/90	---	34.8S	29.1	35.7	WHITE PASS ES PILLON	4500	6/01/90	---	6.1S	.0	15.2
LOST HORSE MOUNT CAN.	6300	5/31/90	22	7.6	1.1	4.0	WHITE RIVER						
MISSION CREEK CAN.	5800	5/30/90	38	18.3	15.4	13.6	CORRAL PASS PILLON	6000	6/01/90	---	31.4S	26.9	24.9
MT. MORAN CAN.	5900	5/29/90	9	3.2	5.1	5.0	MORSE LAKE PILLON	5400	6/01/90	---	25.4S	29.4	31.2
SALMON MOUNTS PILLON	4500	6/01/90	---	.0S	.0	.0	GREEN RIVER						
SILVER STAR MOUNT CAN.	6000	5/27/90	35	17.1	18.1	16.9	COUGAR MOUNT PILLON	3200	6/01/90	---	.0S	.0	.0
WHITE ROCKS MOUNT CAN.	6000	6/04/90	0	.0	.0	9.3	GRASS MOUNTAIN #2	2900	6/01/90	0	.0	.0	--
NETMOW RIVER							LESTER CREEK	3100	6/01/90	0	.0	.0	--
MARTS PASS PILLON	6500	6/01/90	---	34.8S	29.1	35.7	LYNN LAKE	4000	6/01/90	0	.0	.0	--
SALMON MOUNTS PILLON	4500	6/01/90	---	.0S	.0	--	SANMILL RIDGE	4700	6/01/90	14	4.8	14.0	--
CHelan LAKE BASIN							STANPEDE PASS PILLON	3860	6/01/90	---	25.1S	20.1	13.9
LYNN LAKE PILLON	5900	6/01/90	---	53.8S	29.5	47.6	THIN CAMP	4100	6/01/90	0	.0	.0	--
MINERS RIDGE PILLON	6200	6/01/90	---	50.6S	39.3	--	CEDAR RIVER						
PARK CK RIDGE PILLON	4600	6/01/90	---	2.6S	7.1	10.8	SNOQUALMIE RIVER						
RAINY PASS PILLON	4780	6/01/90	---	28.2S	23.5	26.4	OLALLIE E.S. PILLON	3960	6/01/90	---	36.2S	37.5	40.3
ENTIAT RIVER							SKYKOMISH RIVER						
POPE RIDGE PILLON	3546	6/01/90	---	.0S	.0	.0	STANPEDE PASS PILLON	3860	6/01/90	---	25.1S	20.1	13.9
WENATCHEE RIVER							STEVENS PASS PILLON	4070	6/01/90	---	6.1S	1.9	27.5
BLENNETT PASS#2PILLON	4270	6/01/90	---	.0S	.0	.0	SKAGIT RIVER						
FISH LAKE PILLON	3370	6/01/90	---	10.0S	3.9	.0	MARTS PASS PILLON	6500	6/01/90	---	34.8S	29.1	35.7
LYNN LAKE PILLON	5900	6/01/90	---	53.8S	29.5	47.6	LYNN LAKE PILLON	5900	6/01/90	---	53.8S	29.5	47.6
STEVENS PASS PILLON	4070	6/01/90	---	6.1S	1.9	27.5	RAINY PASS PILLON	4780	6/01/90	---	28.2S	23.5	26.4
TROUGH #2 PILLON	5310	6/01/90	---	.0S	.0	--	BAKER RIVER						
UPPER WHEELER PILLON	4400	6/01/90	---	.0S	.0	--	ELWNA RIVER						
SQUILCHUCK CREEK							HORSE CREEK:						
STENILT CREEK:													
UPPER WHEELER PILLON	4400	6/01/90	---	.0S	.0	--							
COLOCKUN CREEK:													
TROUGH #2 PILLON	5310	6/01/90	---	.0S	.0	--							

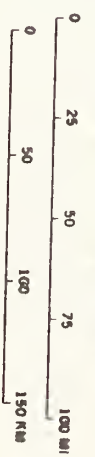
- LEGEND**
- SPRING AND SUMMER PERIOD
(PERCENT OF AVERAGE)**
-  MUCH ABOVE AVERAGE 130+
 -  ABOVE AVERAGE 110-130
 -  NEAR AVERAGE 90-110
 -  BELOW AVERAGE 70-90
 -  MUCH BELOW AVERAGE 70+ LESS
 -  NOT FORECAST
 -  WATERSHED BOUNDARY



JUNE 1, 1990

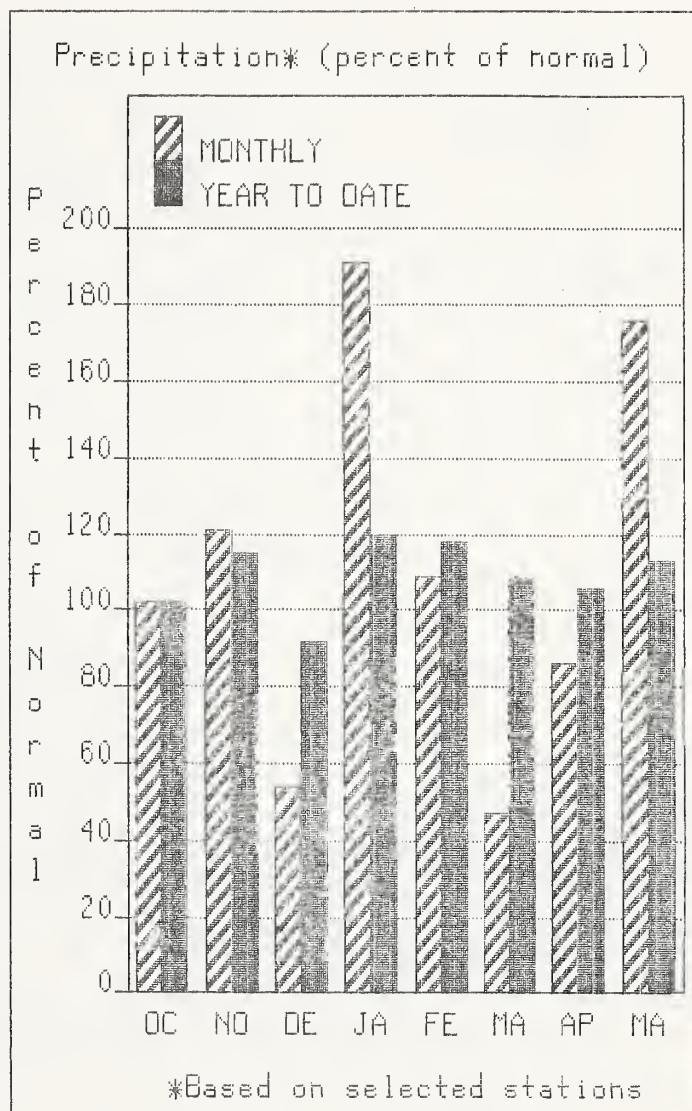
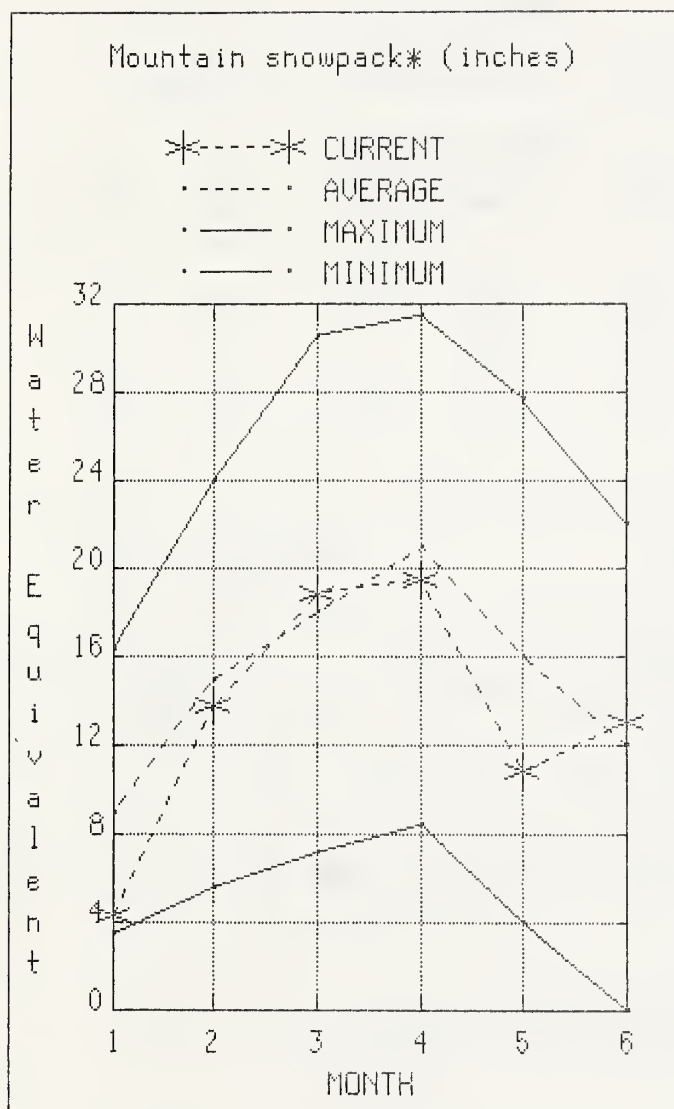
STREAMFLOW PROSPECTS

WASHINGTON



SOURCE: Data compiled by SCS
Field Personnel

SPOKANE



WATER SUPPLY OUTLOOK:

Precipitation for May was 176% of average. Streamflow on the Spokane River was 75% of normal for May. June 1 storage in Coeur d'Alene Lake was 321,200 acre feet; average storage in Coeur d'Alene for June 1 is 353,900 acre feet. Forecasted summer runoff for the Spokane River Basin is 84% of normal. This forecast is based on a snowpack 109% of average and a water year-to-date precipitation value 113% of normal. Maximum snow water occurred at the Lost Lake snow course with 85 inches of snow and 39.8 inches of water content, June 1 average for this site is 44.7 inches of water. Temperatures averaged one degrees below normal during May.

For more information contact your local Fish
Conservation Service office.

SPOKANE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<----- DRIER -----		FUTURE CONDITIONS		----- WETTER ----->		25 YR. (1000AF)
		-----		CHANCE OF EXCEEDING *		-----		
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
SPOKANE nr Post Falls (1,2)	MAY-SEP	1040	1470	1660	85	1850	2280	1957
	MAY-JUL	995	1400	1580	85	1760	2170	1859
SPOKANE at Long Lake (2)	MAY-JUL	1300	1570	1760	84	1950	2220	2097

RESERVOIR STORAGE		(1000AF)		WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF ----- LAST YR. AVERAGE
	CAPACITY:	THIS	LAST				
	: YEAR	YEAR	AVG.				
COEUR D'ALENE	291.2	321.2	278.2	353.9	Spokane River	5	117 109

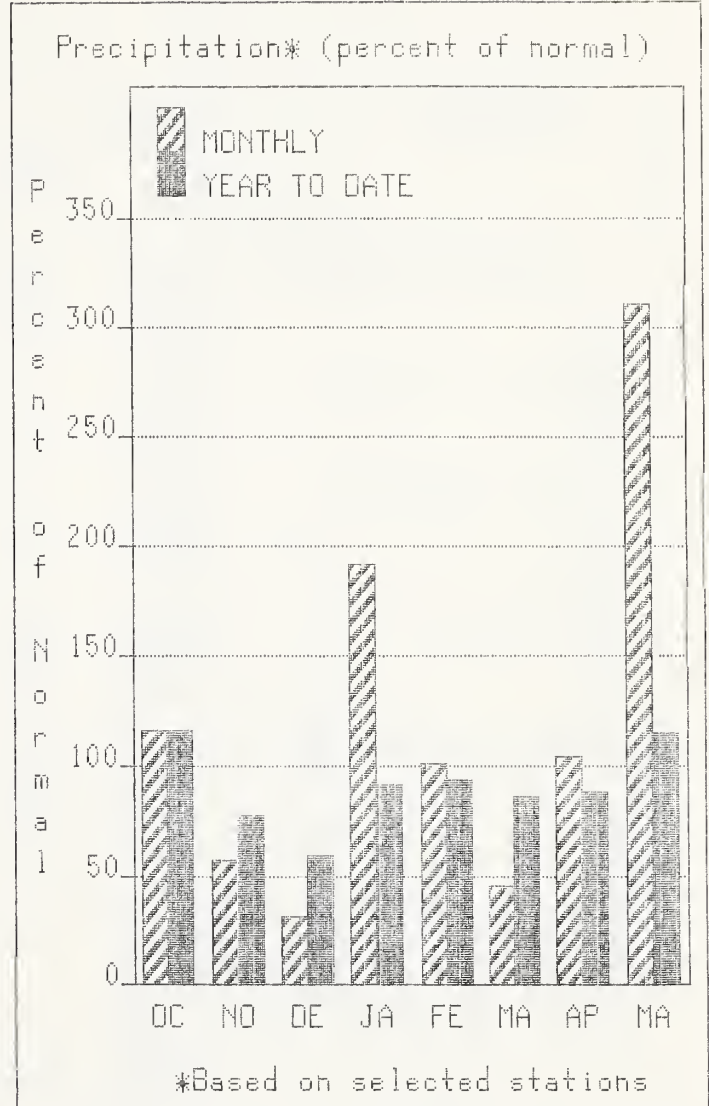
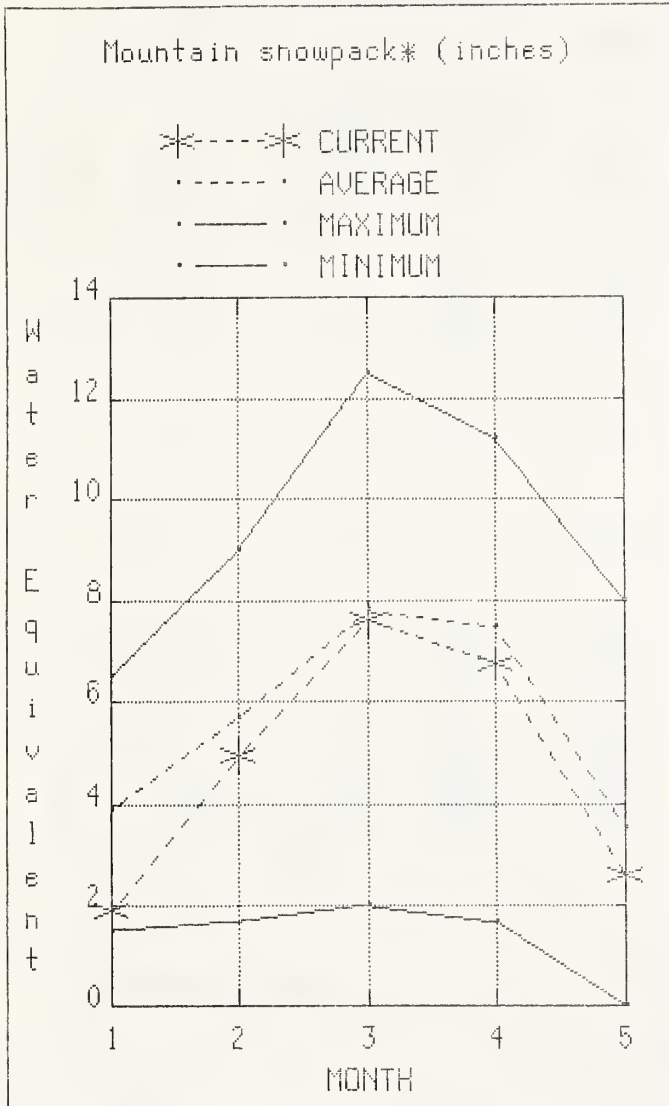
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

COLVILLE - PEND OREILLE



WATER SUPPLY OUTLOOK:

Precipitation during May was 311% of average, bringing the water year-to-date to 115% of normal. June 1 snow cover is 64% of average on the Pend Oreille and 79% on the Kettle. May streamflow was 77 % of normal on the Pend Oreille River, 88% on the Columbia at the International Boundary and 82% on the Kettle River. The forecast for the Kettle River streamflow is 93% of normal, the Pend Oreille 89% and the Colville River 86% of normal for the summer runoff period. Snowpack at Bunchgrass Meadow SNOTEL site was 9.0 inches of water, the average June 1 reading is 17.2. Temperatures averaged two degrees below normal for May.

For more information contact your local Soil Conservation Service Office.

COLVILLE - PEND OREILLE RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<div> <div><----- DRIER -----</div> <div>FUTURE CONDITIONS</div> <div>----- WETTER -----></div> </div>						
		CHANCE OF EXCEEDING *						
		90%	70%	50% (MOST PROBABLE)		30%	10%	25 YR.
		(1000AF)	(1000AF)	(1000AF) (% AVG.)		(1000AF)	(1000AF)	(1000AF)
PEND OREILLE bl Box Canyon (1,2)	MAY-SEP	8330	10600	11700	89	12800	15100	13100
	MAY-JUL	7460	9550	10500	89	11500	13500	11840
	MAY-JUN	6250	8000	8790	89	9580	11300	9879
CHAMOKANE CK nr Long Lake	MAY-AUG	5.0	7.8	9.8	88	11.8	14.6	11.1
	JUL-AUG	2.6	2.9	3.0	81	3.1	3.4	3.7
COLVILLE at Kettle Falls	MAY-SEP	44	64	77	87	90	110	89
	MAY-JUL	38	55	67	86	79	96	78
	MAY-JUN	33	48	58	85	68	83	68
KETTLE nr Laurier	MAY-SEP	1240	1410	1530	93	1650	1820	1644
	MAY-JUL	1160	1330	1440	93	1550	1720	1545
	MAY-JUN	1030	1170	1270	93	1370	1510	1362
COLUMBIA at Grand Coulee Dam (1,2)	MAY-SEP	54600	59900	62300	104	64700	70000	59780
	MAY-JUL	44600	48900	50900	104	52900	57200	49060
	MAY-JUN	33500	36700	38200	104	39700	42900	36760

RESERVOIR STORAGE					(1000AF)	WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF		
	CAPACITY:	THIS	LAST	AVG.			-----	-----	
	:	YEAR	YEAR				LAST YR.	AVERAGE	
ROOSEVELT	5232.0	2921.6	1850.5	2851.0	Colville River	0	0	0	
BANKS	715.0	685.5	645.4	418.0	Pend Oreille River	4	160	88	
					Kettle River	3	128	79	

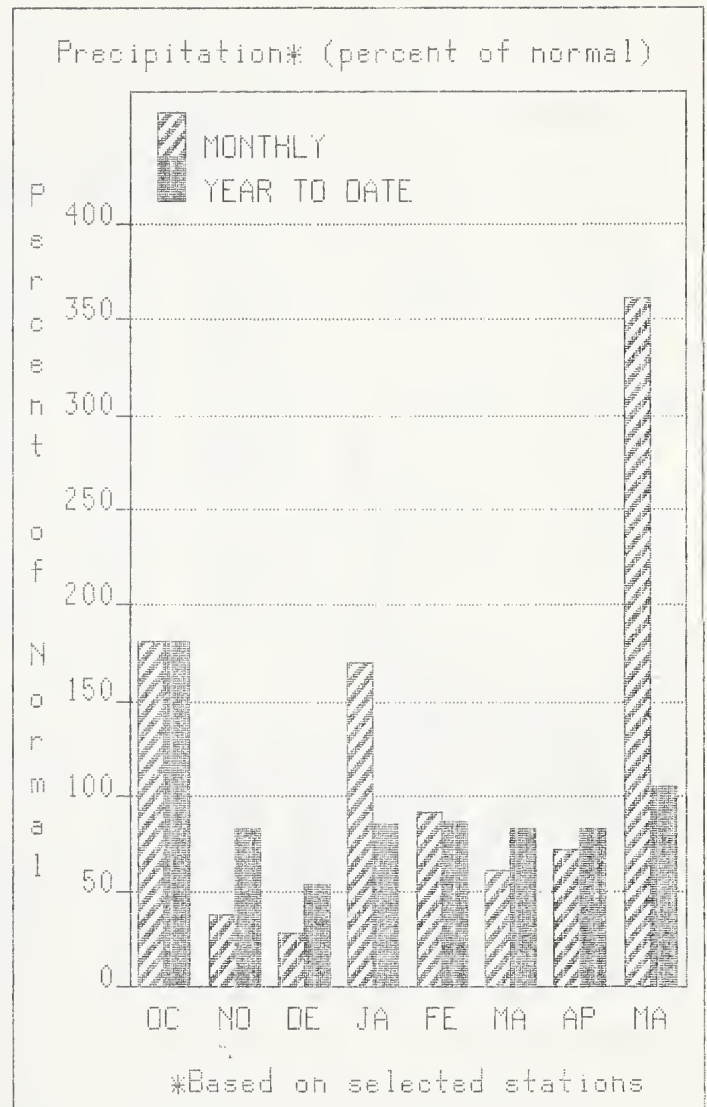
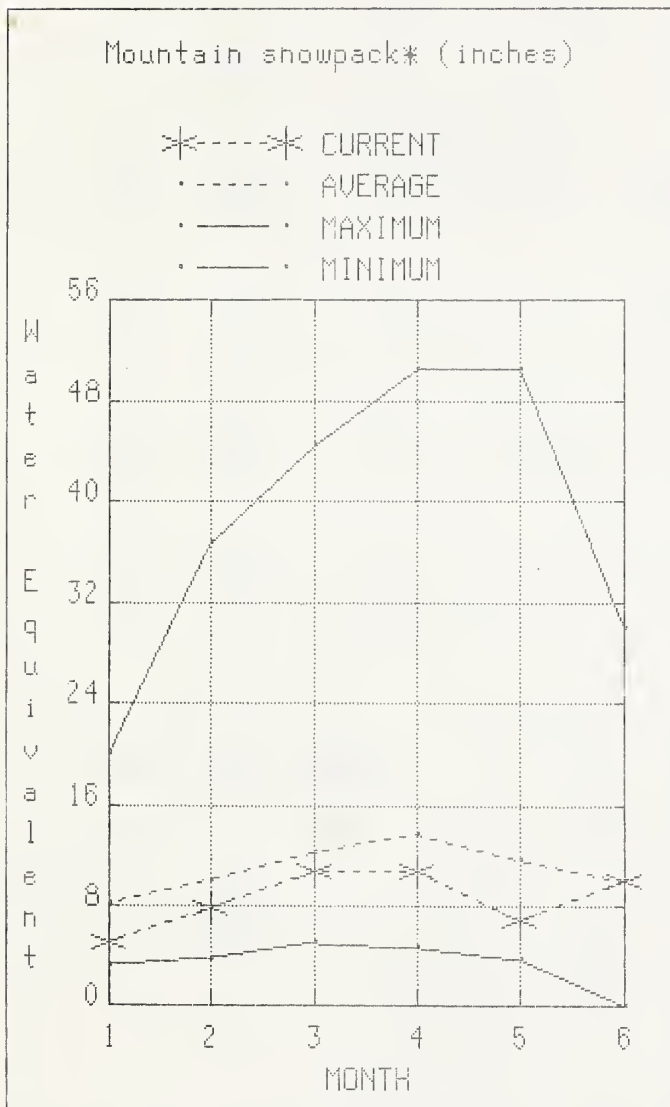
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

OKANOGAN AND METHOW



WATER SUPPLY OUTLOOK:

May precipitation in the Okanogan-Methow was 361% of normal, with water year-to-date 105% of average. May streamflow on the Methow River was 85% of normal, 89 % on the Okanogan River, and 87 % on the Similkameen. Summer runoff for the area's small streams is expected to be below normal. June-September runoff forecast for the Okanogan River is 85% of normal; the Similkameen River, 88%; and the Methow River, 90% of normal. June 1 snow cover was 101% of average on the Okanogan, and 97% for the Methow Basin. Temperatures were one degree above normal for the month. Snow water content at the Harts Pass SNOTEL, elevation 6500 feet, was 34.8 inches of water content in the pack. Storage in the Conconully Reservoirs is 20,800 acre feet, which is 89% of capacity and 101% of June 1 average.

For more information contact your local Soil Conservation Service office.

OKANOGAN - METHOW RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						
		<----- DRIER -----		----- WETTER ----->				
		CHANCE OF EXCEEDING *		CHANCE OF EXCEEDING *		25 YR.		
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	(1000AF)
SIMILKAMEEN R. nr Nighthawk	MAY-SEP	915	1070	1180	88	1290	1450	1345
	MAY-JUL	855	1000	1100	88	1200	1350	1246
	MAY-JUN	710	830	915	88	1000	1120	1042
OKANOGAN R. nr Tonasket	MAY-SEP	1060	1200	1300	85	1400	1540	1527
	MAY-JUL	945	1070	1160	85	1250	1380	1367
	MAY-JUN	775	885	955	85	1030	1130	1123
METHOW RIVER nr Pateros	MAY-SEP	595	725	810	90	895	1020	898
	MAY-JUL	545	660	740	90	820	935	824
	MAY-JUN	455	555	620	90	685	785	687

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE : CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF ----- LAST YR. AVERAGE
	: THIS : YEAR	LAST YEAR	AVG.				
CONCONULLY LAKE (SALMON)	10.5	9.1	9.6	9.0	Okanogan River	8	116 101
CONCONULLY RESERVOIR	13.0	11.7	9.9	9.0	Methow River	1	120 97

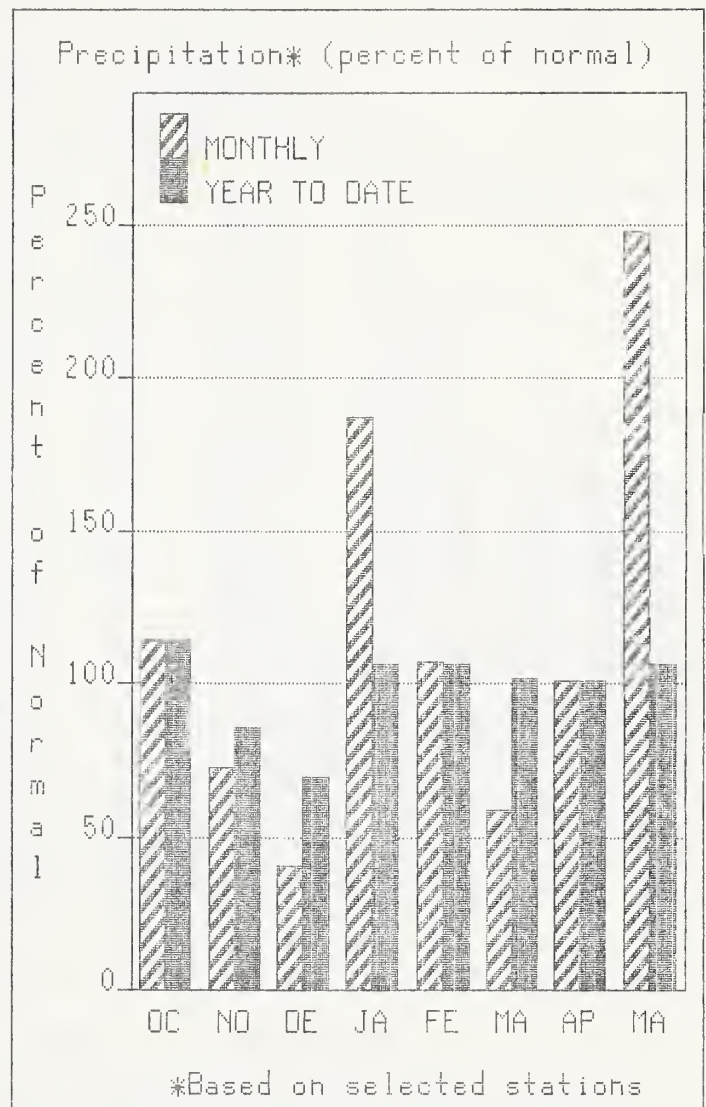
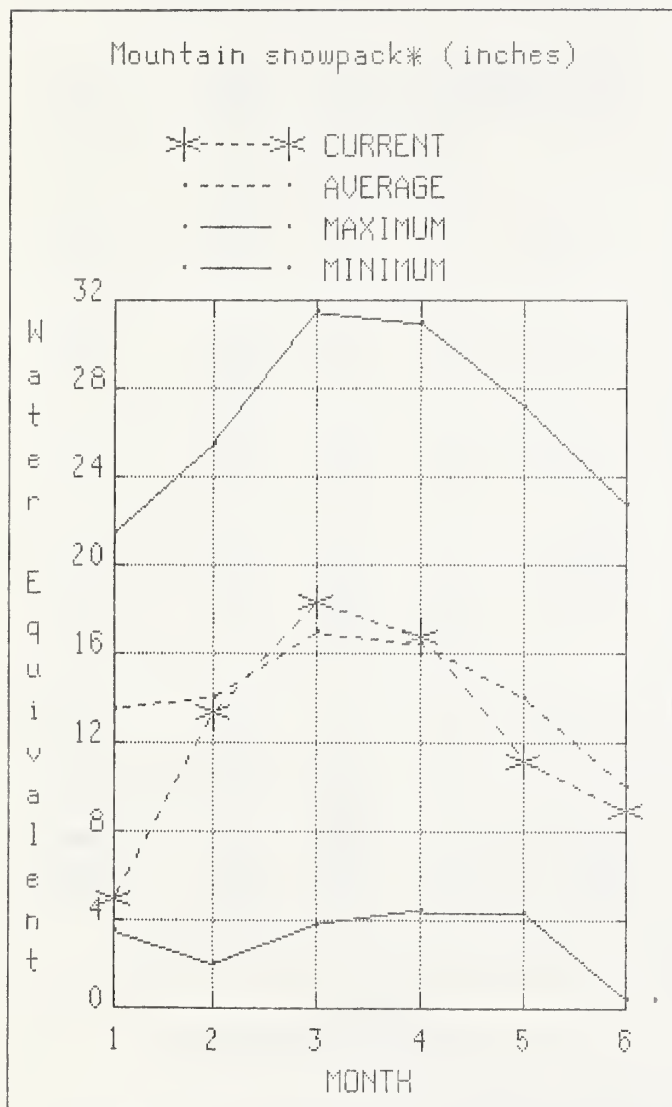
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

WENATCHEE AND CHELAN



WATER SUPPLY OUTLOOK:

Precipitation during May was 248% of normal in the basin and 106% for October 1 to June 1. June 1 snowpack in the Wenatchee Basin is 93% of average up from 80% on May 1 and 100% in the Chelan Basin down from 92%. Reservoir storage in Lake Chelan is 455,500 acre feet or 101% of June 1 average and 67 % of capacity. Lyman Lake SNOTEL had the most snow water with 53.8 inches of water. Runoff for the Entiat River is forecast to be 88% of normal for the summer. Forecasts for the Chelan River are for 95%, Wenatchee River's runoff 92%, and 72% on the Squilchuck-Stemilt. Streamflow for May on the Chelan River was 78% of average and the Wenatchee River was 78% of normal.

For more information contact your local Soil Conservation Service office.

WENATCHEE - CHELAN RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<----- DRIER -----		FUTURE CONDITIONS		----- WETTER ----->		25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	CHANCE OF EXCEEDING *		30% (1000AF)	10% (1000AF)	
				50% (MOST PROBABLE) (1000AF)	(X AVG.)			
CHELAN RIVER at Chelan (1)	MAY-SEP	815	955	1020	95	1080	1230	1075
	MAY-JUL	725	850	905	97	960	1030	931
	MAY-JUN	555	645	690	98	735	825	707
STEHEKIN R. at Stehekin	MAY-SEP	670	715	745	96	775	820	775
	MAY-JUL	560	600	625	97	650	690	645
	MAY-JUN	415	440	460	97	430	505	473
ENTIAT RIVER nr Ardenvoir	MAY-SEP	158	177	190	88	205	220	217
	MAY-JUL	143	160	172	88	184	200	195
	MAY-JUN	113	127	136	88	145	159	155
WENATCHEE R. at Peshastin	MAY-SEP	880	1170	1370	92	1570	1860	1489
	MAY-JUL	785	1040	1220	92	1400	1650	1327
	MAY-JUN	610	810	945	92	1080	1280	1027
STEMILT nr Wenatchee (miners in)	MAY-SEP	54	81	99	72	117	144	138
ICICLE CREEK nr Leavenworth	APR-SEP	245	315	365	99	415	485	370
	APR-JUL	220	285	330	97	375	440	340
	APR-JUN	172	225	260	96	295	350	270
COLUMBIA R. bl Rock Island Dam (2)	MAY-SEP	64500	68700	71600	110	74500	78700	65060
	MAY-JUL	53300	56800	59200	110	61600	65100	53860
	MAY-JUN	40200	42800	44600	110	46400	49000	40550

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE : CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
CHELAN LAKE	676.1	455.5	424.0	450.6	Chelan Lake Basin	3	141	100
					Entiat River	1	0	0
					Wenatchee River	4	198	93
					Squilchuck Creek	0	0	0
					Stemilt Creek	0	0	0
					Colockum Creek	0	0	0

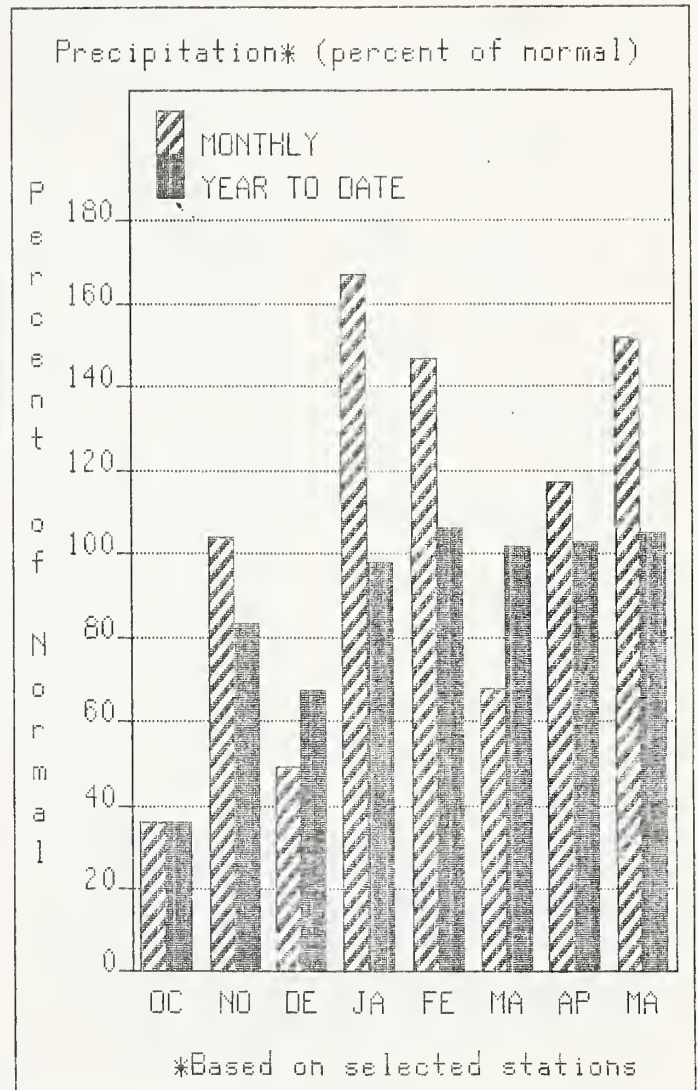
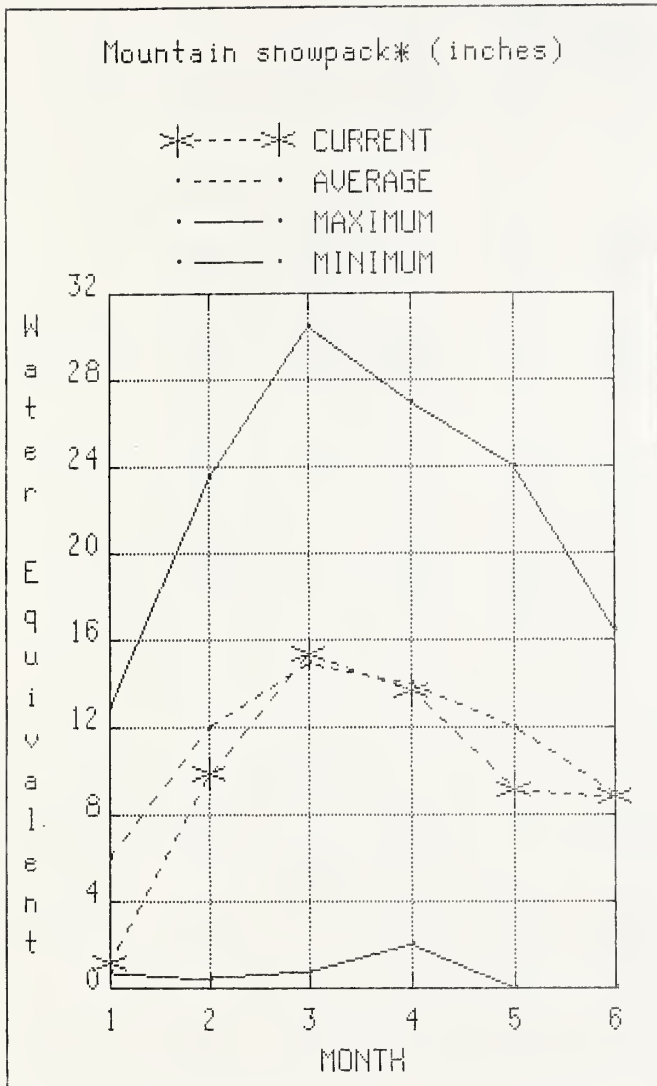
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

YAKIMA



WATER SUPPLY OUTLOOK:

The outlook for irrigation water for the summer has been updated to excellent with June 1 reservoir storage for the five major reservoirs at 1,049,600 acre feet, up from 956,700 acre feet on June 1, (by June 6 the reservoirs were filled, the first time since 1978). May precipitation was 152% of normal and 105% for the water year-to-date. June 1 streamflow forecasts for the Yakima Basin runoff vary throughout the basin as follows: the Yakima River at Cle Elum, 81%; Naches River, 74%; the Yakima River at Parker, 77%; Ahtanum Creek, 70%, and Tieton River 77%. May streamflow on the Yakima River at Parker was 73% of normal, and 81% on the Yakima near Cle Elum. Snowpack is 99% of average on June 1, up from 76% on May 1, in the Yakima Basin based upon 10 snow courses and SNOTEL readings. Temperatures were two degrees below average for May. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U. S. Bureau of Reclamation's forecast for the total water supply available which includes adjustments for reservoir operation and irrigation return flow.

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS					
		<----- DRIER ----->		FUTURE CONDITIONS		----- WETTER ----->	
		90% (1000AF)	70% (1000AF)	CHANCE OF EXCEEDING * 50% (MOST PROBABLE) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)
							25 YR. (1000AF)
YAKIMA RIVER at Martin (1)	MAY-SEP	80	92	97	89	102	109
	MAY-JUL	75	85	90	90	95	100
	MAY-JUN	63	72	76	89	80	85
YAKIMA RIVER at Cle Elum (2)	MAY-SEP	535	595	635	81	675	786
	MAY-JUL	455	510	545	80	580	682
	MAY-JUN	380	425	455	80	485	570
YAKIMA RIVER nr Parker (2)	MAY-SEP	985	1170	1300	77	1430	1682
	MAY-JUL	875	1040	1150	78	1260	1469
	MAY-JUN	740	880	975	78	1070	1250
KACHESS RIVER nr Easton (1)	MAY-SEP	70	83	89	82	95	108
	MAY-JUL	58	69	74	83	79	89
	MAY-JUN	50	60	64	83	66	77
CLE ELUM RIVER nr Roslyn (1)	MAY-SEP	270	310	330	84	350	393
	MAY-JUL	245	285	300	85	315	353
	MAY-JUN	200	230	245	85	260	289
BUMPING RIVER nr Nile (1)	MAY-SEP	82	99	106	86	113	123
	MAY-JUL	75	90	97	87	104	112
	MAY-JUN	61	73	78	87	83	90
AMERICAN RIVER nr Nile	MAY-SEP	78	86	91	85	96	107
	MAY-JUL	71	78	83	86	88	97
	MAY-JUN	59	64	68	86	72	79
TIETON RIVER at Tieton (1)	MAY-SEP	119	149	163	77	177	213
	MAY-JUL	102	127	138	78	149	177
	MAY-JUN	78	97	106	78	115	136
NACHES RIVER nr Naches (2)	MAY-SEP	440	500	540	74	580	726
	MAY-JUL	395	450	485	75	520	645
	MAY-JUN	325	370	400	75	430	533
AHTANUM CREEK nr Tampico (2)	MAY-SEP	19.0	24	27	69	30	39
	MAY-JUL	16.0	21	24	69	27	35
	MAY-JUN	13.7	17.4	20	69	23	29

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE : CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
		THIS YEAR	LAST YEAR	AVG.			
KEEACHELUS	157.8	159.2	144.4	144.0	Yakima River	11	109
KACHESS	239.0	235.2	190.8	218.0	Ahtanum Creek	1	0
CLE ELUM	436.9	428.4	407.1	378.0			
BUMPING LAKE	33.7	31.3	28.6	27.0			
RIMROCK	198.0	195.5	187.0	167.0			

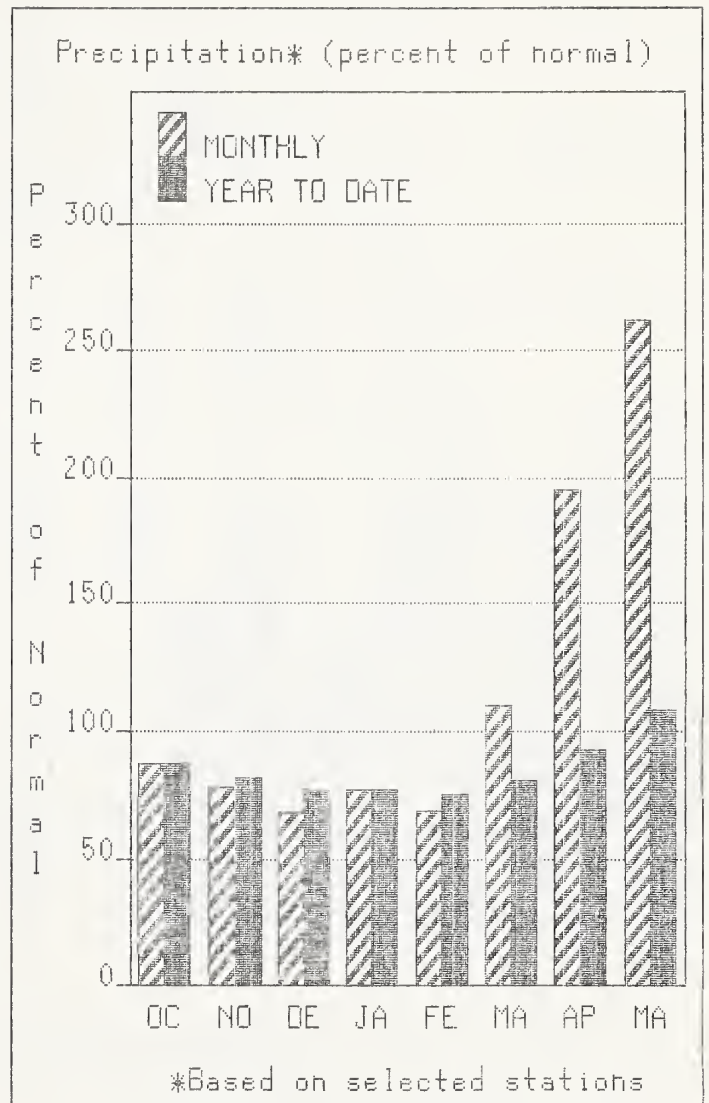
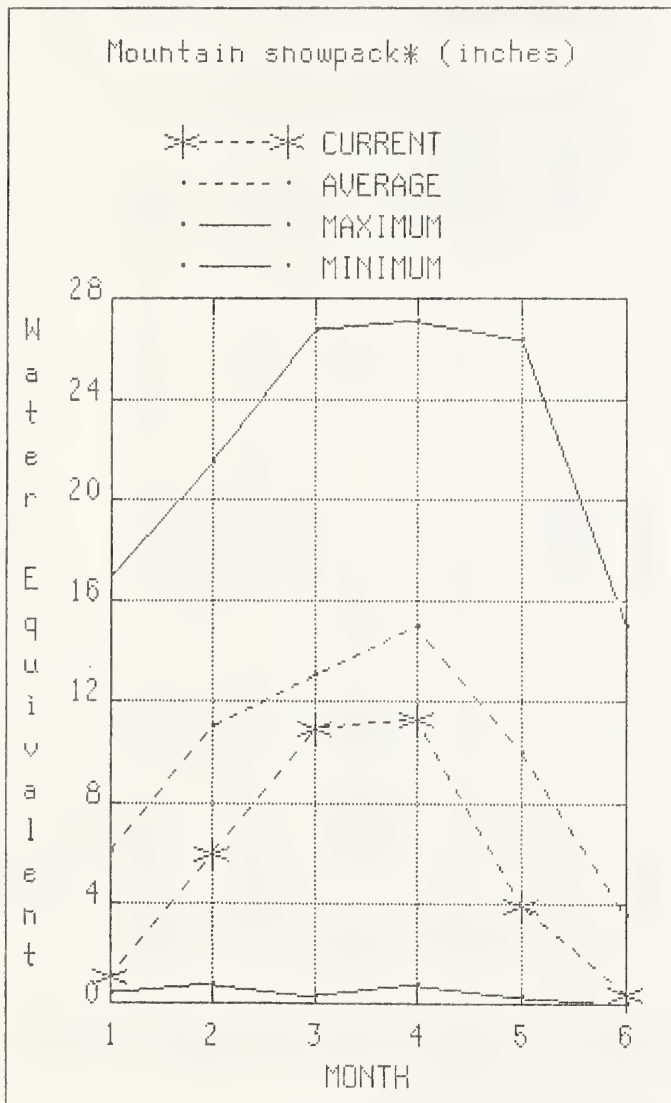
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The average is computed for the 1961-1985 base period.

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WALLA WALLA



WATER SUPPLY OUTLOOK:

The forecast is for 59% of average streamflow in the Walla Walla River for the coming summer, and 56% for Mill Creek. May streamflow was 77% of normal on the Walla Walla River, 61% for the Snake River and 77% on the Grande Ronde River near Troy. May precipitation was 262% of average bringing the water year-to-date precipitation to 108% of normal. There were 3.27 inches of precipitation recorded at the Walla Walla for May. Temperatures were near average for May. Snow melted out from the Touchet SNOTEL site on May 28.

For more information contact your local Soil Conservation Service office.

WALLA WALLA RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<div> <div><----- DRIER -----</div> <div>FUTURE CONDITIONS</div> <div>----- WETTER -----></div> </div>						
		CHANCE OF EXCEEDING *						
		90%	70%	50% (MOST PROBABLE)		30%	10%	25 YR.
		(1000AF)	(1000AF)	(1000AF) (% AVG.)		(1000AF)	(1000AF)	(1000AF)
MILL CREEK at Walla Walla	MAY-SEP	1.2	3.1	4.4	57	5.7	7.6	7.7
	MAY-JUL	1.0	2.9	4.2	56	5.5	7.4	7.5
	MAY-JUN	1.1	2.9	4.1	56	5.3	7.1	7.3
SF WALLA WALLA nr Milton Freewater	MAY-JUL	17.0	21	23	59	25	29	39
COLUMBIA R. at The Dalles (2)	MAY-SEP	72900	79800	84400	95	89000	95900	88790
	MAY-JUL	60800	66500	70400	95	74300	80000	74070
	MAY-JUN	47200	51600	54600	95	57600	62000	57430

RESERVOIR STORAGE		(1000AF)	WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE :	** USEABLE STORAGE **	WATERSHED	NO.	THIS YEAR AS % OF
	CAPACITY:	THIS LAST		COURSES	-----
	: YEAR	YEAR AVG.		AVG'D	LAST YR. AVERAGE
			Mill Creek	1	0 0

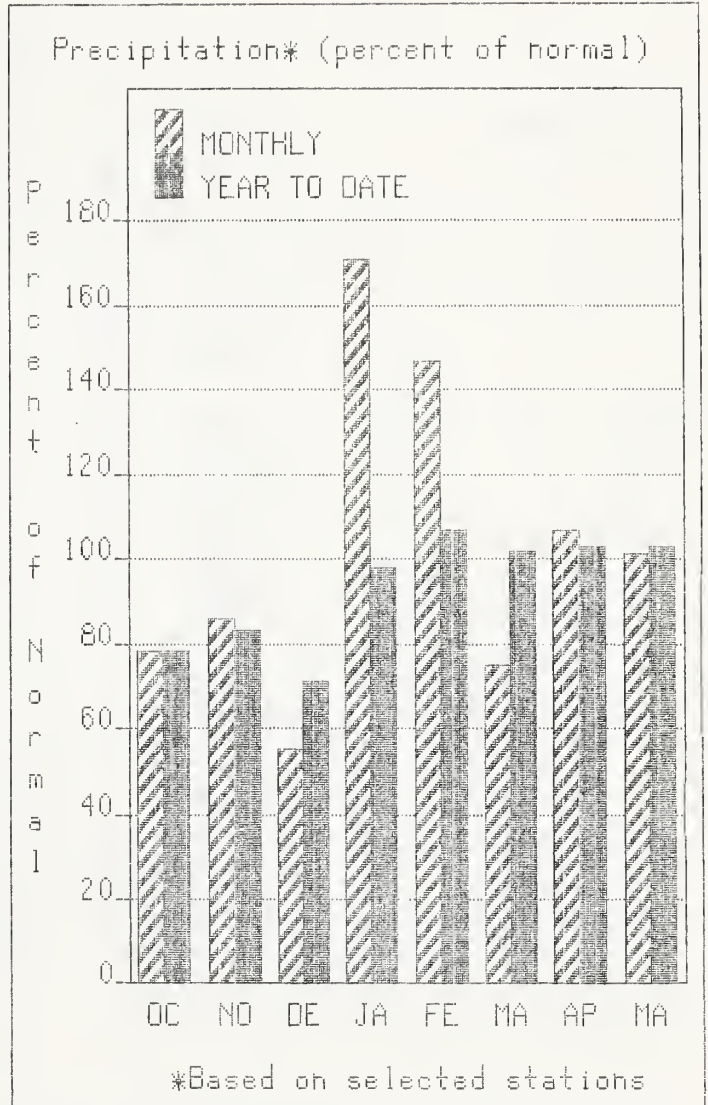
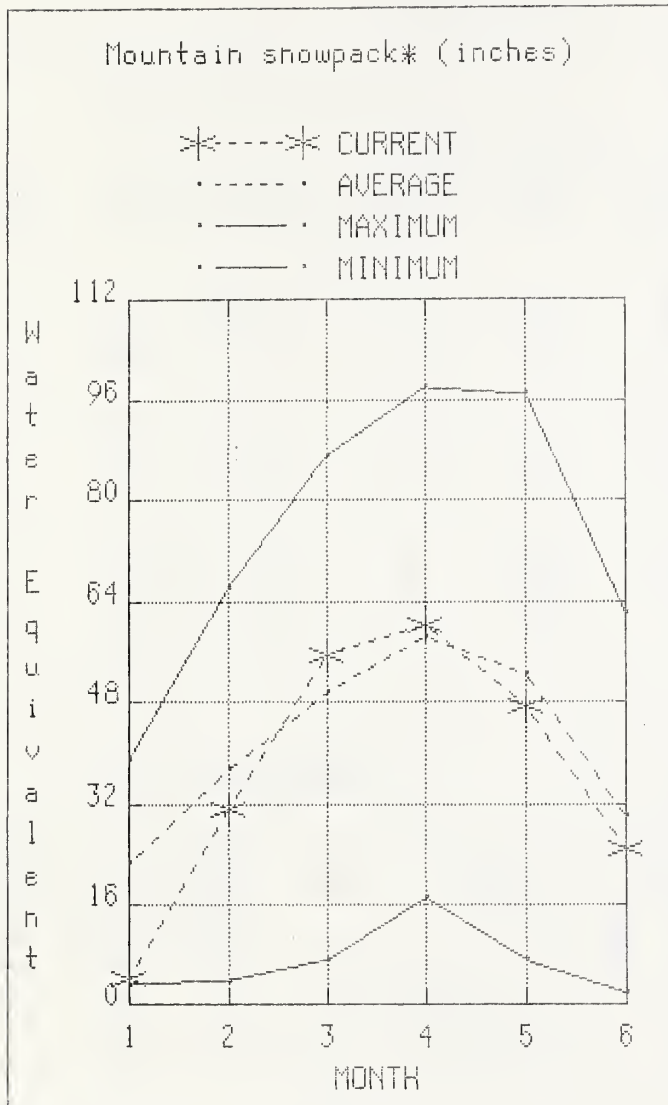
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The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

COWLITZ AND LEWIS



WATER SUPPLY OUTLOOK:

May streamflow on the Lewis River was 75% of normal and on the Cowlitz River it was 87%. June 1 snow cover for the Cowlitz-Lewis Basin is 83% of normal, down from 93% on May 1. Summer runoff forecasts for the Lewis River are 90%, and for the Cowlitz River, 93%. May precipitation was 101% of normal bringing the water year-to-date precipitation to 103% of average. The Paradise Park SNOTEL has the maximum water content for the basin with 71.4 inches of water, normal June 1 water content is 70.7 inches. Temperatures were one degree below normal for May.

For more information contact your local Soil Conservation Service office.

COWLITZ - LEWIS RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<div> <div><----- DRIER ----- FUTURE CONDITIONS ----- WETTER -----></div> <div>CHANCE OF EXCEEDING *</div> </div>						
		90%	70%	50% (MOST PROBABLE)		30%	10%	25 YR.
		(1000AF)	(1000AF)	(1000AF) (% AVG.)		(1000AF)	(1000AF)	(1000AF)
LEWIS RIVER at Ariel (2)	MAY-SEP	600	725	810	91	895	1020	892
	MAY-JUL	500	605	675	92	745	850	732
	MAY-JUN	400	485	545	90	605	690	606
COWLITZ R. bl Mayfield Dam (2)	MAY-SEP	670	1130	1450	90	1770	2230	1604
	MAY-JUL	535	925	1190	88	1460	1850	1350
	MAY-JUN	430	745	960	88	1170	1490	1092
COWLITZ R. at Castle Rock (2)	MAY-SEP	905	1500	1900	93	2300	2900	2050
	MAY-JUL	710	1200	1540	90	1880	2370	1706
	MAY-JUN	570	970	1240	90	1510	1910	1378

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE ;	** USEABLE STORAGE **			WATERSHED	NO.	THIS YEAR AS % OF
	CAPACITY:	THIS	LAST	AVG.		COURSES	-----
		YEAR	YEAR			AVG'D	LAST YR. AVERAGE
					Cowlitz River	5	86 102
					Lewis River	4	64 54

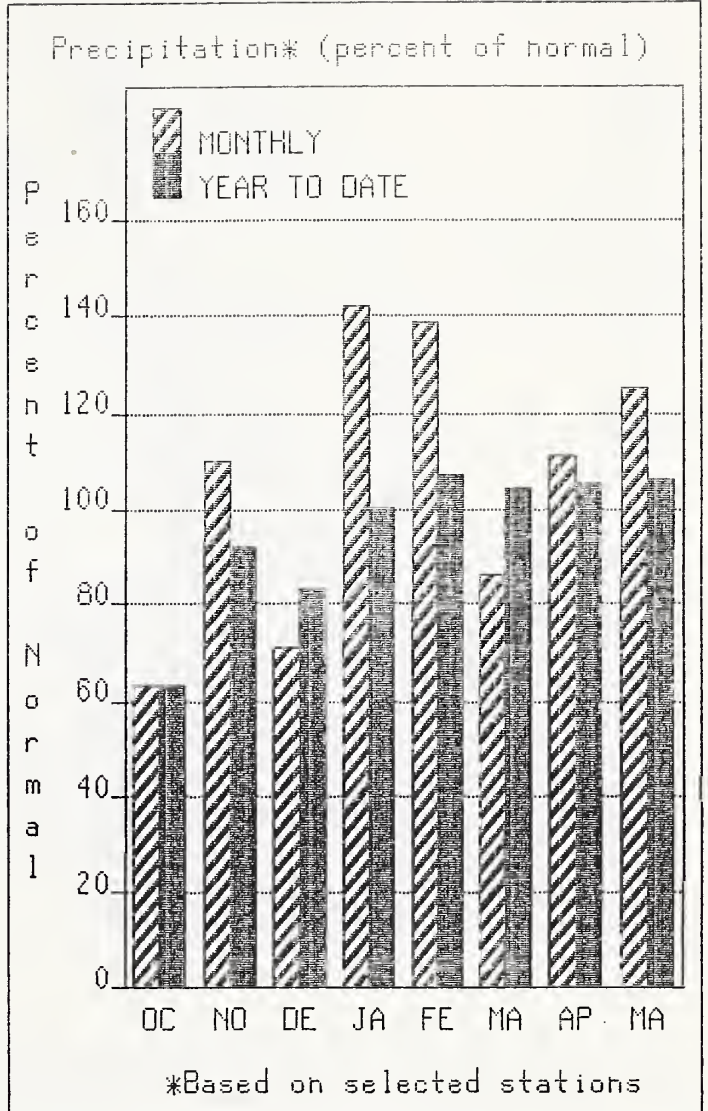
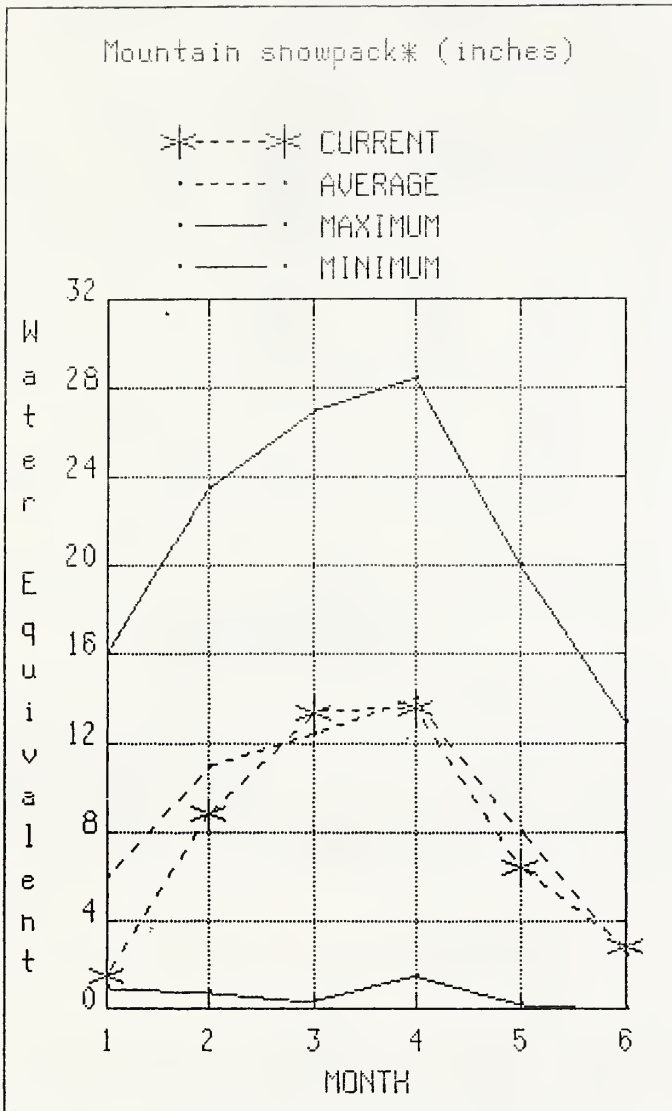
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The average is computed for the 1961-1985 base period.

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(2) - The value is natural flow - actual flow may be affected by upstream water management.

WHITE - GREEN



WATER SUPPLY OUTLOOK:

June 1 snowpack was 117% of normal on the White - Green Basin . May precipitation was 125% of normal, bringing the water year-to-date to 106% of average. Summer runoff is forecasted to be 90% on the Green River, and 97% of normal on the Cedar River. Water content on June 1 at the Stampede Pass SNOTEL, at an elevation of 3860 feet, was 25.1 inches, this site has a June 1 average of 13.9 inches. Temperatures were average for May.

For more information contact your local Soil Conservation Service office.

WHITE - GREEN RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<div> <div><----- DRIER -----</div> <div>FUTURE CONDITIONS</div> <div>----- WETTER -----></div> </div>						
		CHANCE OF EXCEEDING *						
		90%	70%	50% (MOST PROBABLE)		30%	10%	25 YR.
		(1000AF)	(1000AF)	(1000AF) (X AVG.)		(1000AF)	(1000AF)	(1000AF)
GREEN R bl Howard Hanson Dam (2)	MAY-SEP	151	172	186	90	200	220	207
	MAY-JUL	128	146	158	89	170	188	177
	MAY-JUN	110	126	136	89	146	162	153
CEDAR RIVER nr Cedar Falls	MAY-SEP	60	67	72	97	77	85	74
	MAY-JUL	52	59	63	96	68	74	66
	MAY-JUN	43	48	52	96	56	61	54

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
		THIS YEAR	LAST YEAR	AVG.			
					White River	2	101 101
					Green River	2	125 181
					Cedar River	0	0 0

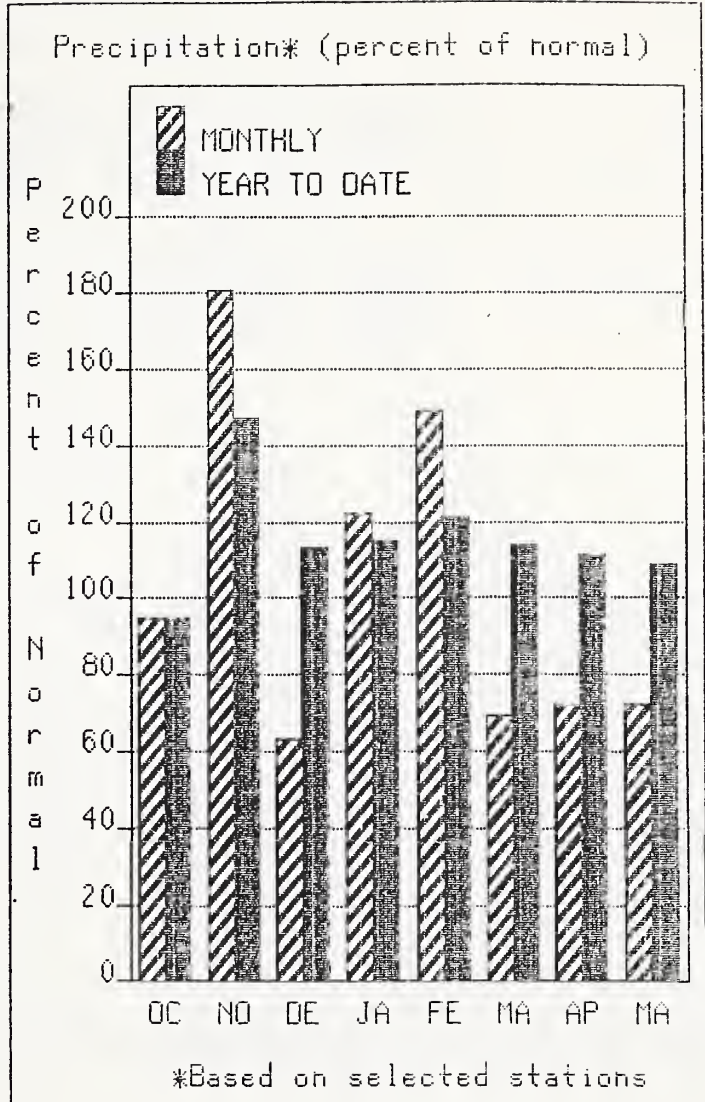
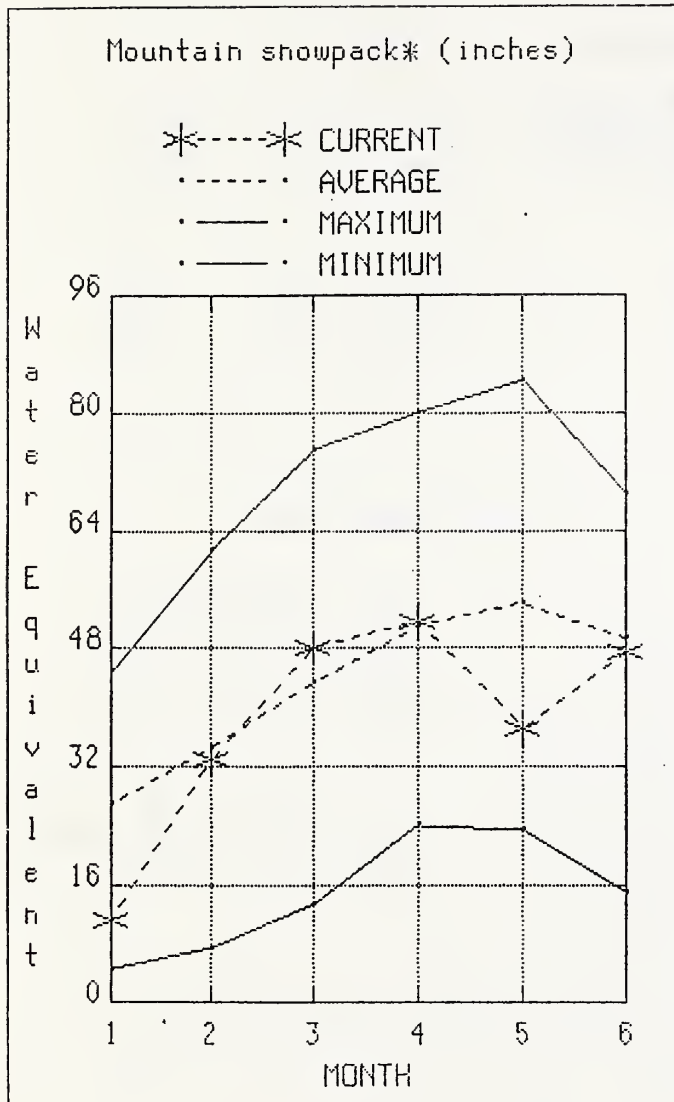
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

NORTH PUGET SOUND



WATER SUPPLY OUTLOOK:

May streamflow in the Skagit River was 76% of average. Forecast for the Skagit River is 92% of normal for the spring and summer period. June 1 snow cover in the SkagitBasin is 106% of normal. Rainy Pass SNOTEL at elevation of 4780 feet, has 28.2 inches of water content; normal June 1 water content is 26.4 inches. June 1 reservoir storage is near average, with Ross Lake reservoir at 96% of normal and 70% of capacity. Precipitation values for May were 72% of average with a water year-to-date at 109% of normal. May temperatures were near normal.

For more information contact your local Soil Conservation Service office.

NORTH PUGET SOUND RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<div style="display: flex; justify-content: space-between; align-items: center;"> <----- DRIER ----- FUTURE CONDITIONS ----- WETTER -----> </div>						
		CHANCE OF EXCEEDING *						
		90%	70%	50% (MOST PROBABLE)		30%	10%	25 YR.
		(1000AF)	(1000AF)	(1000AF) (% AVG.)		(1000AF)	(1000AF)	(1000AF)
SKAGIT RIVER at Newhalem (2)	MAY-SEP	1590	1780	1900	92	2020	2210	2062
	MAY-AUG	1440	1610	1730	90	1850	2020	1919
	MAY-JUL	1320	1470	1570	93	1670	1820	1689
	MAY-JUN	1160	1290	1380	93	1470	1600	1485

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
ROSS	1404.1	988.4	1012.5	1033.9	Snoqualmie River	1	97	90
DIABLO RESERVOIR	90.6	86.3	86.4	86.1	Skykomish River	2	142	75
GORGE RESERVOIR	9.8	7.4	7.8	8.3	Skagit River	3	142	106
					Baker River	0	0	0

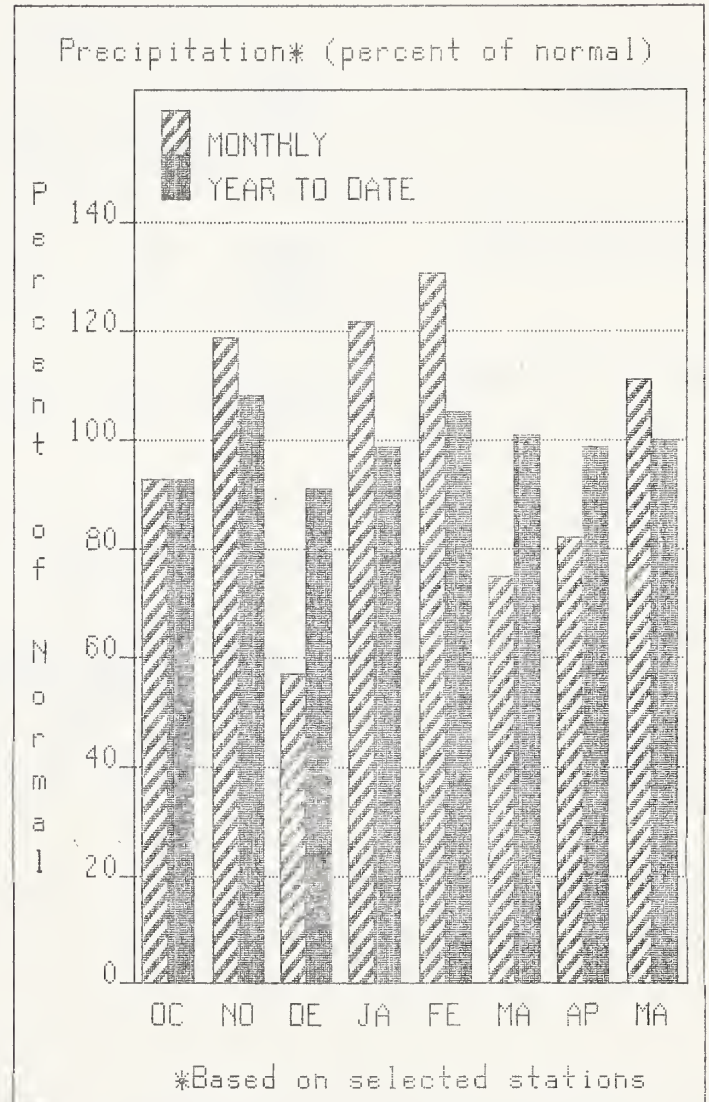
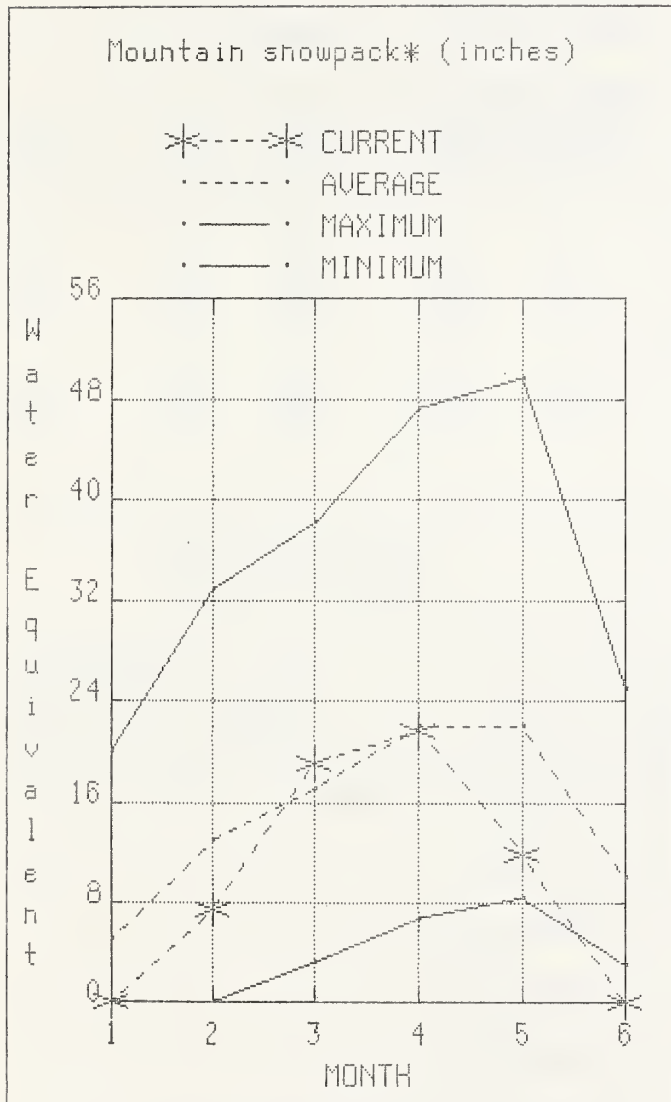
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

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(2) - The value is natural flow - actual flow may be affected by upstream water management.

OLYMPIC



WATER SUPPLY OUTLOOK:

June forecasts of runoff for streamflow in the basin are for 90% of average on the Dungeness River and 91% for the Elwah River. Precipitation for May was 111% of average, with Quillayute receiving 4.59 inches. The basin water year-to-date precipitation accumulation is 100% of normal. There are no snow course readings for June 1 in the Olympic area. The Mount Craig SNOTEL near Quilcene had meltout on May 28. Temperatures were near normal for May.

For more information contact your local Soil Conservation Service office.

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OLYMPIC PENINSULA RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<----- DRIER ----- FUTURE CONDITIONS ----- WETTER ----->						
		CHANCE OF EXCEEDING *						
		90%	70%	50% (MOST PROBABLE)		30%	10%	25 YR.
		(1000AF)	(1000AF)	(1000AF) (% AVG.)		(1000AF)	(1000AF)	(1000AF)
DUNGENESS RIVER nr Sequim	MAY-SEP	101	115	124	91	133	147	137
	MAY-JUL	80	91	98	90	105	116	109
	MAY-JUN	71	80	87	90	94	103	97
ELWHA RIVER nr Port Angeles	MAY-SEP	330	375	405	90	435	480	451
	MAY-JUL	265	300	325	90	350	385	363

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE :	** USEABLE STORAGE **			WATERSHED	NO.	THIS YEAR AS % OF	
	CAPACITY:	THIS	LAST			COURSES	-----	
		YEAR	YEAR	AVG.		AVG'D	LAST YR.	AVERAGE
					Elwha River	0	0	0
					Morse Creek	0	0	0
					Dungeness River	0	0	0
					Quilcene River	0	0	0
					Wynoochee River	0	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

NAL-367 (8/82)

NOTES:

